



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 072982/0191

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Title: INFORMATION PROCESSING DEVICE AND INFORMATION
PROCESSING METHOD USING FINGERPRINT IDENTIFICATION
Serial No.: 09/396,423
Filed: September 15, 1999
Examiner: Mahmoudi, Hassan
Art Unit: 2175

RECEIVED
NOV 25 2003
Technology Center 2100

PERFECTION OF CLAIM FOR CONVENTION PRIORITY

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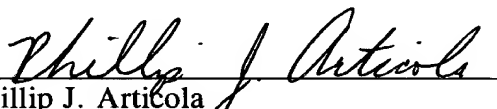
The benefit of the filing date of the following prior foreign application filed in the following foreign country was requested in a claim for convention priority that was filed on September 15, 1999, where the right of priority provided in 35 U.S.C. §119 was claimed.

In order to perfect that claim, filed herewith is a verified translation of the original foreign application:

- Japan Patent Application No. 10-261502 filed September 16, 1998.
Respectfully submitted,

November 19, 2003
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DECLARATION

I, Takao MARUYAMA, a Japanese Patent Attorney registered No. 8425, having my business office at SAM Bldg., 38-23, Higashi-Ikebukuro 2-chome, Toshima-ku, Tokyo 170-0013, Japan, solemnly and sincerely declare that I have a thorough knowledge of Japanese and English languages, that I made an English translation attached hereto, and that to the best of my knowledge and belief the translation is a true and correct reproduction of the original documents filed with the Japanese Patent Office in respect of Japanese Patent Application No. 10-261502 on September 16, 1998 in the name of NEC Corporation.

Signed this 11th day of November, 2003

A handwritten signature in black ink, appearing to read 'Takao Maruyama', is written over a horizontal line.

Takao Maruyama

Patent Attorney

PATENT OFFICE
JAPANESE GOVERNMENT

This is to certify that the annexed is a true copy of
the following application as filed with this Office.

Date of Application: September 16, 1998

Application Number: Patent Application No. 10-261502

Applicant: NEC Corporation

June 11, 1999

Commissioner, Takeshi Isayama
Patent Office

(Seal)

Certificate No. 11-3037879

[Title of Document] Request for Patent

[Reference Number] 33509301

[Submitting date] September 16, 1998

[Address]

To Honorable Commissioner of the Patent Office

[International Classification] G06K 9/00

[Title of Invention]

INFORMATION PROCESSING DEVICE AND INFORMATION PROCESSING
METHOD USING FINGERPRINT IDENTIFICATION

[Number of Claims] 8

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[Indication of Charge]	
[Ledger Number of Payment in Advance]	008279
[Amount of Payment]	21000
[List of Objects Submitted]	
[Title of Object]	Specification 1
[Title of Object]	Drawings 1
[Title of Object]	Abstract 1
[Number of Inclusive Power of Attorney]	9115699
[Necessity of Proof]	Necessity

[Title of Document]

Specification

[Title of the Invention]

INFORMATION PROCESSING DEVICE AND INFORMATION
PROCESSING METHOD USING FINGERPRINT IDENTIFICATION

[Scope of Claim for a Patent]

[Claim 1] An information processing method using
fingerprint identification comprising the steps of:

identifying a user according to an inputted
fingerprint;

retaining user's individual information regarding a
device in association with the user with respect to each
identified user at the time when the user suspends the use of
the device; and

selecting the retained user's individual information
associated with the identified user to provide the user with
the information when the user resumes the use of the device.

[Claim 2] An information processing method using
fingerprint identification as claimed in claim 1, wherein the
user's individual information includes any of work progress
information, work environmental information, and work history
information of the user who uses the device.

[Claim 3] An information processing device using
fingerprint identification comprising:

a fingerprint image input means for acquiring a
fingerprint image of a user to output the fingerprint image to
a fingerprint feature extraction means;

a suspension/ resumption management means for
accepting an instruction for either suspension or resumption

of the use of the device from the user to output the instruction for either suspension or resumption to the fingerprint feature extraction means and a user individual information storage means;

the fingerprint feature extraction means for extracting fingerprint features from the fingerprint image received from the fingerprint image input means, and when receiving an instruction for suspension from the suspension/resumption management means, outputting the fingerprint features to the user individual information storage means, while when receiving an instruction for resumption, outputting the fingerprint features to a fingerprint matching means;

the user individual information storage means for storing the fingerprint features received from the fingerprint feature extraction means in association with the user's individual information regarding the device when receiving an instruction for suspension from the suspension/resumption management means, while when receiving an instruction for resumption from the suspension/resumption management means, outputting a group of already stored fingerprint features (hereinafter referred to as registered fingerprint feature) to the fingerprint matching means to receive matching results therefrom, subsequently, selecting fingerprint features from the registered fingerprint feature group according to the matching results, and selecting the user's individual information associated with the selected fingerprint features in order to output it to a user individual information processing means;

the fingerprint matching means for receiving the registered fingerprint feature group from the user individual

information storage means, implementing matching processing between the registered fingerprint feature group and fingerprint features received from the fingerprint feature extraction means, and outputting matching results to the user individual information storage means; and

the user individual information processing means for receiving the user's individual information from the user individual information storage means, and implementing specific processing depending on the content of the user's individual information.

[Claim 4] An information processing device using fingerprint identification as claimed in claim 3, wherein the user's individual information includes any of work progress information, work environmental information, and work history information of the user who uses the device.

[Claim 5] An information processing device using fingerprint identification as claimed in claim 3 or 4, wherein:

the suspension/ resumption management means outputs the instruction for either suspension or resumption to an indication information management means in addition to the fingerprint feature extraction means and the user individual information storage means;

the user individual information processing means includes:

an instruction input means for accepting an instruction for the operation of the device from the user in order to output the instruction to the indication information processing means;

a presentation information management means for

storing management information of information to be presented to the user, and when receiving the instruction for operation from the instruction input means, updating the management information according to the instruction for operation in order to output the information to a presentation means;

the presentation means for receiving the management information from the presentation information management means, acquiring information to be presented to the user from a device data storage means according to the management information in order to present it; and

a device data storage means for storing information which the device should maintain; and

when receiving an instruction for suspension from the suspension/ resumption management means, the presentation information management means outputs the management information to the user individual information storage means, while when receiving an instruction for resumption from the suspension/ resumption management means, the presentation information management means updates storage content according to the management information received from the user individual information storage means.

[Claim 6] An information processing device using fingerprint identification as claimed in claim 5, comprising:

at least one client section provided with a fingerprint scanner, the suspension/ resumption management means, the feature extraction means, the instruction input means, the presentation means, and the presentation information management means; and

at least one server section provided with the user individual information storage means, the fingerprint

matching means, and the device data storage means, wherein:

the client section is connected with the server section through network.

[Claim 7] An information processing device using fingerprint identification as claimed in one of claims 3 to 6, which is any of an electronic picture book device, a game device, and a retrieval device.

[Claim 8] A storage medium which stores an information processing program using fingerprint identification run on a computer to execute the process including:

a step of identifying a user according to an inputted fingerprint;

a step of accepting an instruction for either suspension or resumption;

a step of storing user's individual information regarding a device in which the program is installed in association with the user in every identified user when receiving an instruction for suspension; and

a step of selecting the individual information associated with the identified user from the users' individual information which has been stored previously to provide the user with the information when receiving an instruction for resumption.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention]

The present invention relates to an information processing device using fingerprint matching. More particularly, this invention relates to improvement in the suspension-resumption function when a large number of users

share the same information processing device.

[0002]

[Prior Art]

As an example of the information device which is shared by a plurality of users may be cited an electronic picture book. The electronic picture book is a device for amusement or education, which successively displays the computerized contents of a book on its display when, for example, a user pushes a button "forward", as if turning over the pages of the book. Such electronic picture book may be placed in homes, kindergartens, primary schools, etc., and therefore it is conceivable that one and the same electronic picture book is shared by a plurality of users. Under such circumstances, it is likely to transpire that a user A has to let another user B use the device halfway through the electronic picture book. In this case, it is required to provide the suspension/ resumption function which enables the user A to smoothly resume reading where the user A left off when the device becomes available for the user A again.

[0003]

Besides, as another example may be cited a game device. The game device is mainly placed in amusement facilities and homes. The former is as a matter of course used by a plurality of users. Also the latter may be used by a plurality of users such as brothers, friends, or the like. Therefore, the game device is also required to retain information on user's progress, an operational environment and the like with respect to each user, thus it becomes necessary to provide the suspension/ resumption function as in the electronic picture book.

[0004]

As yet another example may be cited a retrieval device (for instance, a device for searching the Internet for home pages). In the retrieval operation, retrieval efficiency can be improved with the use of retrieval history, and therefore, it is desirable that a user be able to obtain his/ her retrieval history information to perform a search when starting the use of the retrieval device.

[0005]

Such suspension/ resumption function has been realized in such a way that a user saves his/ her individual information on how far he/ she has read or progressed with a name (a file name or a password) when suspending the use of the device, and he/ she obtains the individual information by specifying the name (the file name or the password) when resuming the use of the device.

[0006]

[Problems that the Invention is to Solve]

However, according to the conventional method for realizing the suspension/ resumption function, in which a user saves his/ her individual information with a file name when suspending the use of the device, and obtains the individual information by specifying the file name when resuming the use of the device, the user has to memorize the file name, etc. for the individual information. This burden increases in the case where the user uses a password, etc. so that another user cannot change the individual information since the password is more effective when it is a meaningless character string.

[0007]

In addition, there is a problem in that it is not

always easy for a user such as a little child, a juvenile, an elderly person, and a disabled person to input or specify a file name.

[0008]

In view of the foregoing, it is an object of the present invention to reduce burdens on the user who suspends/ resumes the use of an information device and enable the user to suspend/ resume the use of the information device smoothly in the case where a plurality of users share one and the same information device and the respective users have their own individual information (how far the users have read or progressed, etc.) regarding the information device.

[0009]

[Means of Solving the Problems]

In accordance with an aspect of the present invention, there is provided an information processing method using fingerprint identification comprising the steps of: identifying a user according to an inputted fingerprint; retaining user's individual information regarding a device in association with the user with respect to each identified user at the time when the user suspends the use of the device; and selecting the retained user's individual information associated with the identified user to provide the user with the information when the user resumes the use of the device.

[0010]

Preferably, the user's individual information includes any of work progress information, work environmental information, and work history information of the user who uses the device.

[0011]

In accordance with another aspect of the present invention, there is provided an information processing device using fingerprint identification comprising: a fingerprint image input means for acquiring a fingerprint image of a user to output the fingerprint image to a fingerprint feature extraction means; a suspension/ resumption management means for accepting an instruction for either suspension or resumption of the use of the device from the user to output the instruction for either suspension or resumption to the fingerprint feature extraction means and a user individual information storage means; the fingerprint feature extraction means for extracting fingerprint features from the fingerprint image received from the fingerprint image input means, and when receiving an instruction for suspension from the suspension/ resumption management means, outputting the fingerprint features to the user individual information storage means, while when receiving an instruction for resumption, outputting the fingerprint features to a fingerprint matching means; the user individual information storage means for storing the fingerprint features received from the fingerprint feature extraction means in association with the user's individual information regarding the device when receiving an instruction for suspension from the suspension/ resumption management means, while when receiving an instruction for resumption from the suspension/ resumption management means, outputting a group of already stored fingerprint features (hereinafter referred to as registered fingerprint feature) to the fingerprint matching means to receive matching results therefrom, subsequently, selecting

fingerprint features from the registered fingerprint feature group according to the matching results, and selecting the user's individual information associated with the selected fingerprint features in order to output it to a user individual information processing means; the fingerprint matching means for receiving the registered fingerprint feature group from the user individual information storage means, implementing matching processing between the registered fingerprint feature group and fingerprint features received from the fingerprint feature extraction means, and outputting matching results to the user individual information storage means; and the user individual information processing means for receiving the user's individual information from the user individual information storage means, and implementing specific processing depending on the content of the user's individual information.

[0012]

Preferably, the user's individual information includes any of work progress information, work environmental information, and work history information of the user who uses the device.

[0013]

In accordance with yet another aspect of the present invention, the suspension/ resumption management means outputs the instruction for either suspension or resumption to an indication information management means in addition to the fingerprint feature extraction means and the user individual information storage means, the user individual information processing means includes: an instruction input means for accepting an instruction for the operation of the device from

the user in order to output the instruction to the indication information processing means; a presentation information management means for storing management information of information to be presented to the user, and when receiving the instruction for operation from the instruction input means, updating the management information according to the instruction for operation in order to output the information to a presentation means; the presentation means for receiving the management information from the presentation information management means, acquiring information to be presented to the user from a device data storage means according to the management information in order to present it; and a device data storage means for storing information which the device should retain, and the presentation information management means outputs the management information to the user individual information storage means when receiving an instruction for suspension from the suspension/ resumption management means, while when receiving an instruction for resumption from the suspension/ resumption management means, the presentation information management means updates storage content according to the management information received from the user individual information storage means.

[0014]

In accordance with yet a further aspect of the present invention, there is provided a storage medium which stores an information processing program using fingerprint identification run on a computer to execute the process including: a step of identifying a user according to an inputted fingerprint; a step of accepting an instruction for either suspension or resumption; a step of storing user's

individual information regarding a device in which the program is installed in association with the user in every identified user when receiving an instruction for suspension; and a step of selecting the individual information associated with the identified user from the users' individual information which has been stored previously to provide the user with the information when receiving an instruction for resumption.

[0015]

[Function]

In accordance with the present invention, the information processing device identifies a user by an inputted fingerprint, and when the use of the device is suspended, retains the user's individual information (for instance, work progress information, work environmental information, or work history information) regarding the device in association with the user, while when the use of the device is resumed, the device acquires the individual information corresponding to the identified user in order to provide the user with the information.

[0016]

[Embodiments of the Invention]

An embodiment of the present invention will be described referring to Fig. 1. An information processing device 1 according to an embodiment of the present invention comprises a fingerprint scanner 10, a suspension/ resumption management section 11, a feature extraction section 12, a user individual information storage section 13, a one-to-multiplicity matching section 14, and a user individual information processing section 15.

[0017]

The fingerprint scanner 10 captures a fingerprint image at the time when the finger of a user comes into contact with the fingerprint scanner 10. The fingerprint scanner 10 converts image data into digital image data so that the data can be processed in the feature extraction section 12. As the configuration of the fingerprint scanner, it is possible to adopt an optical system, in which light emitted from an LED is reflect off a prism, and at this time, the reflected light is converted into a digital image by a CCD, making use of the difference in reflectance between fingerprint's ridges and valleys, based on the ridges of the finger placed on the outside of a reflective surface to, thereby capture a fingerprint image.

[0018]

The suspension/ resumption management section 11 gives instructions for the suspension or resumption of the use of the device to the feature extraction section 12 and/ or the user individual information storage section 13 according to input provided by the user.

[0019]

The feature extraction section 12 receives the fingerprint image from the fingerprint scanner 10, and executes processing for extracting features used for fingerprint identification with regard to the fingerprint image. As a method for realizing the feature extraction, for instance, there is found a method described in the following literature: "Automated Fingerprint Identification by Minutia-Network Feature --Feature Extraction Processes--" by Ko ASAI, Yukio HOSHINO and Kazuo KIJI, Transactions of the Institute

of Electronic and Communication Engineers of Japan vol. J72-D-11, no. 5, pp. 724 to 732 (May 1989). According to the method, a ridge-pattern is extracted from a shading image including ridges by binarization processing and thinning processing, then points at which ridges end or divide are detected, subsequently the number of ridges crossing line segments which interconnect the points is counted, and a chart showing relationships among them is represented as digital data, which is used for fingerprint matching as fingerprint features. The feature extraction section 12 outputs the extracted fingerprint features (hereinafter referred to as inputted fingerprint features) to the user individual information storage section 13 when receiving an instruction for suspension from the suspension/ resumption management section 11, while when receiving an instruction for resumption, the feature extraction section 12 outputs the fingerprint features to the one-to-multiplicity matching section 14.

[0020]

When receiving an instruction for suspension from the suspension/ resumption management section 11, the individual information storage section 13 stores the inputted fingerprint features received from the feature extraction section 12 in association with the individual information of the user regarding the information processing device 1 (hereinafter the fingerprint features stored in the user individual information storage section 12 are referred to as registered fingerprint features). Incidentally, fingerprint features extracted from the different fingers of a user may be stored in association with different individual

information, respectively.

[0021]

Here, the user individual information includes all the data which are regarded as useful information concerning the user in the data which are processed by the information processing device 1. For example, the user individual information may include work progress information (how far the work has progressed), work environmental information (in what environment the work has been carried out), and work history information (with what instruction the work has been conducted) when the user suspends the use of the device. More specifically, the user individual information may include such information as "how far the user has read the electronic picture book", "how far the user has progressed in the game", "what background screen has been selected in the display screen", "what layout the display screen has had", "what retrieval results have been obtained so far", "what retrieval keys have been given so far", "what commands have been given so far", and the like.

[0022]

The user individual information may be specified by the user, or specified automatically in the information processing device 1.

[0023]

When receiving an instruction for resumption from the suspension/ resumption management section 11, the user individual information storage section 13 outputs registered fingerprint feature group to the one-to-multiplicity matching section 14. In addition, the user individual information storage section 13 selects the user's individual information

which has been associated with the registered fingerprint features having the highest similarity to the inputted fingerprint features according to matching results received from the one-to-multiplicity matching section 14, and outputs the user individual information to the user individual information processing section 14.

[0024]

The one-to-multiplicity matching section 14 receives the inputted fingerprint features and the registered fingerprint feature group from the feature extraction section 12 and the user individual information storage section 13, respectively. Besides, the one-to-multiplicity matching section 14 compares the inputted fingerprint features with the respective registered fingerprint features to calculate the similarity, thus outputting the fingerprint features with the highest similarity in the registered fingerprint feature group to the user individual information storage section 13 as the matching results.

[0025]

Here, the similarity is defined so as to increase when the compared fingerprint features are obtained from the identical finger, and the Mahalanobis distance in the special space formed by the fingerprint features may be used. The similarity can be obtained, for example, by the method described as the prior art in "Automated Fingerprint Identification by Minutia-Network Feature --Matching Process--" by Ko ASAI, Yukio HOSHINO, and Kazuo KIZI, Transactions of the Institute of Electronics and Communication Engineers of Japan, vol. J72-D-11, no. 5, pp. 733 to 740 (May 1989).

[0026]

Incidentally, on the occasion when a matching processing is implemented in the one-to-multiplicity matching section 14, in the case where there are detected registered fingerprint features with the similarity higher than a prescribed threshold value in the process of matching processing, the registered fingerprint features with a similarity higher than the threshold value may be outputted as matching results without matching the inputted fingerprint features with all the registered fingerprint features.

[0027]

The user individual information processing section 15 receives the selected user's individual information from the user individual information storage section 13. The user individual information processing section 15 transmits/presents the individual information to the user, determines settings in the information processing device 1, or sends communications to another device group depending on the content of the user's individual information.

[0028]

Next, a description will be made of the first embodiment of the present invention with reference to Fig. 2. In this embodiment, the present invention is applied to an electronic picture book device.

[0029]

The electronic picture book device 2 of the first embodiment comprises a fingerprint scanner 10 for inputting a fingerprint image from a user, a suspension/resumption management section 11, a feature extraction section 12, a user individual information storage section 13, a one-to-multiplicity matching section 14, and a user individual

information processing section 15. The user individual information processing section 15 includes an instruction input section 100, an indication information management section 101, an electronic picture book data storage section 102, and a page indication section 103.

[0030]

There are a variety of user individual information for the electronic picture book device such as how far a user has read the electronic picture book, what background picture has been selected in the display screen, and when text is outputted by voice, whether the voice is of male or female. In this embodiment, however, the information as to how far the user has read the electronic picture book (page position information) is taken as an example of the user individual information for the purpose of the explanations.

[0031]

In the first embodiment, the fingerprint scanner 10, the feature extraction section 12, and the one-to-multiplicity matching section 14 are of the same construction and operate in the same manner as those described previously in connection with Fig. 1.

[0032]

The suspension/ resumption management section 11 outputs an instruction for suspension or resumption to the indication information management section 101 in addition to the feature extraction section 12 and the user individual information storage section 13.

[0033]

When receiving an instruction for suspension from the suspension/ resumption management section 11, the user

individual information storage section 13 receives the page position information from the indication information management section 101, and stores the page position information in association with the inputted fingerprint features. On the other hand, when receiving an instruction for resumption from the suspension/ resumption management section 11, the user individual information storage section 13 outputs the page position information which has been selected based on the result of matching to the indication information management section 101.

[0034]

The instruction input section 100 accepts an instruction for operation with respect to the electronic picture book such as "to go to the next page", "to turn back to the previous page", and the like from the user. The accepted instruction is outputted to the indication information management section 101.

[0035]

The indication information management section 101 stores information on the position of a page to be indicated. When the indication information management section 101 receives an instruction "to go to the next page", etc. from the instruction input section 100, the indication information management section 101 updates the stored page position information according to the instruction, and outputs the information to the page indication section 104.

[0036]

Besides, when receiving an instruction for suspension from the suspension/ resumption management section 11, the indication information management section 101 outputs the

page position information to the user individual information storage section 13. Here, it is suitable to utilize not only the page number at which the book is opened at present, but also detailed information as to how far the user has read the electronic picture book in the page as the page position information. Such detailed information can be obtained in such a manner as to provide the page indication section 103 with a touch panel function so that the user can give an instruction as to how far he/ she has read with the use of the touch panel.

[0037]

On the other hand, when receiving an instruction for resumption from the suspension/ resumption management section 11, the indication information management section 101 receives the page position information from the user individual information storage section 13 to update storage content, and outputs it to the page indication section 104.

[0038]

The electronic picture book data storage section 102 stores the data of the electronic picture book, and outputs the data in response to a request from the page indication section 103.

[0039]

The page indication section 103 receives the page position information from the indication information management section 101, and obtains the data of the page to be indicated according thereto from the electronic picture book data storage section 102 to indicate the page.

[0040]

According to the second embodiment, the present

invention is applied to a game device which is of the same construction and operates in the similar manner as the electronic picture book device in the first embodiment. That is, as shown in Fig. 3, the configuration of a game device 3 having the suspension/ resumption function according to the present invention can be obtained in such a way that the page indication section of the first embodiment is replaced with a game screen indication section, the electronic picture book storage section of the first embodiment is replaced with a game data storage section, and the page position information of the first embodiment is replaced with game progress information.

[0041]

Further, according to the third embodiment, the present invention is applied to a retrieval device which is of the same construction and operates in the similar manner as the electronic picture book device in the first embodiment. In other words, as shown in Fig. 4, it is possible to constitute a retrieval device 4 having the suspension/ resumption function according to the present invention in such a way that the page indication section of the first embodiment is replaced with a retrieval information - history indication section, the electronic picture book data storage section of the first embodiment is replaced with a retrieval object data storage section, and the page position information of the first embodiment is replaced with a retrieval history information. In this case, the retrieval history information includes the history of retrieval results and/ or the history of retrieval keys. In the third embodiment, the past retrieval results and/ or the retrieval keys used in the past

can be reused by user's instruction with respect to the retrieval history information indicated in the retrieval information - history indication section, which improves efficiency in retrieval.

[0042]

Still further, according to the fourth embodiment, the first embodiment of the present invention is extended so as to utilize networks. As can be seen in Fig. 5, in an electronic picture book device 5 of the fourth embodiment, a client section 6 for indicating the electronic picture book to the user is connected to a server section 7 for managing the electronic picture book data through a network. There may be a plurality of the server sections and client sections, however, the electronic picture book device 5 of the fourth embodiment comprises one server section and one client section for the purpose of the explanations.

[0043]

For instance, such electronic picture book device utilizing the network is used in such a way that the server section is provided in an electronic library, and a user reads the electronic picture book from an arbitrary client section.

[0044]

The client section 6 includes a fingerprint scanner 10, a suspension/ resumption management section 11, a feature extraction section 12, an instruction input section 100, an indication information management section 101, and a page indication section 103. On the other hand, the server section 7 includes a user individual information storage section 13, a one-to-multiplicity matching section 14, and an electronic picture book data storage section 102.

[0045]

In this embodiment, the respective constituents operate in essentially the same manner as those of the first embodiment except that input and output between constituents included in the client section and constituents included in the server section are implemented through the network.

[0046]

In the following, a description will be given of the fifth embodiment of the present invention with reference to the drawing. Referring to Fig. 6, in accordance with the fifth embodiment, there is provided a storage medium 8 which stores an information processing program using fingerprint identification. The storage medium 8 may be a storage medium such as a CD-ROM, a magnetic disk, a semiconductor memory or the like. In addition, the data may be communicated through a network.

[0047]

The information processing program using the fingerprint identification is read out of the storage medium 8 to a data processing device 9 to control the operation of the data processing device 9. The data processing device 9 identifies a user based on a fingerprint image inputted from the fingerprint scanner 10 under the control of the information processing program using the fingerprint identification. The data processing device 9, on receipt of an instruction for suspension, stores the individual information of the user regarding the device into which the program is installed in association with the user with respect to each identified user. The data processing device 9, on receipt of an instruction for resumption, selects the

individual information associated with the identified user from the users' individual information which has been stored previously to provide the information to the user.

[0048]

In other words, the data processing device 9 executes the same processing as that carried out by the suspension/resumption management section 11, the feature extraction section 12, the user individual information storage section 13, the one-to-multiplicity matching section 14, and the user individual information processing section 15 in Fig. 1 under the control of the information processing program using the fingerprint identification.

[0049]

[Effect of the Invention]

As set forth hereinabove, in accordance with the present invention, in the case where a plurality of users share one and the same information device and the users each have individual information (for instance, work progress information, work environmental information, and work history information) concerning the information device, each user is identified according to an inputted fingerprint, and at the time when the use of the device is suspended, individual information for the user regarding the device is retained in association with the user, while at the time when the use of the device is resumed, the retained individual information associated with the identified user is selected so as to be provided to the user. Thus, it is possible to reduce burdens on the user who suspends/ resumes the use of the device and enable the user to suspend/ resume the use of the device smoothly.

[Brief Description of the Drawings]

[Fig. 1]

A block diagram showing the configuration of an information processing device according to an embodiment of the present invention.

[Fig. 2]

A block diagram showing the first embodiment of the present invention.

[Fig. 3]

A block diagram showing the second embodiment of the present invention.

[Fig. 4]

A block diagram showing the third embodiment of the present invention.

[Fig. 5]

A block diagram showing the fourth embodiment of the present invention.

[Fig. 6]

A block diagram showing the fifth embodiment of the present invention.

[Description of Code]

- 1 Information processing device
- 2 Electronic picture book device
- 3 Game device
- 4 Retrieval device
- 5 Electronic picture book device
- 6 Client section
- 7 Server section
- 8 Storage medium
- 9 Data processing device

- 10 Fingerprint scanner
- 11 Suspension/ resumption management section
- 12 Feature extraction section
- 13 User individual information storage section
- 14 One-to-multiplicity matching section
- 15 User individual information processing section
- 100 Instruction input section
- 101 Indication information management section
- 102 Electronic picture book data storage section
- 103 Page indication section
- 201 Game screen indication section
- 202 Game data storage section
- 301 Retrieval information - history indication section
- 302 Retrieval object data storage section

[Title of Document]

Abstract

[Abstract]

[Problem] To reduce burdens on the user who suspends/ resumes the use of the device so that the user can suspend/ resume the use of the device smoothly in the case where a plurality of users share one and the same information device and the users each have individual information (how far the user has read. etc.) concerning the information device.

[Means of Solving] Each user is identified according to an inputted fingerprint, and at the time when the use of the device is suspended, individual information for the user regarding the device (for example, work progress information, work environmental information, and work history information) is retained in association with the user, while at the time when the use of the device is resumed, the retained individual information associated with the identified user is selected so as to be provided to the user.

[Selected Drawing] Fig. 1



FIG. 1

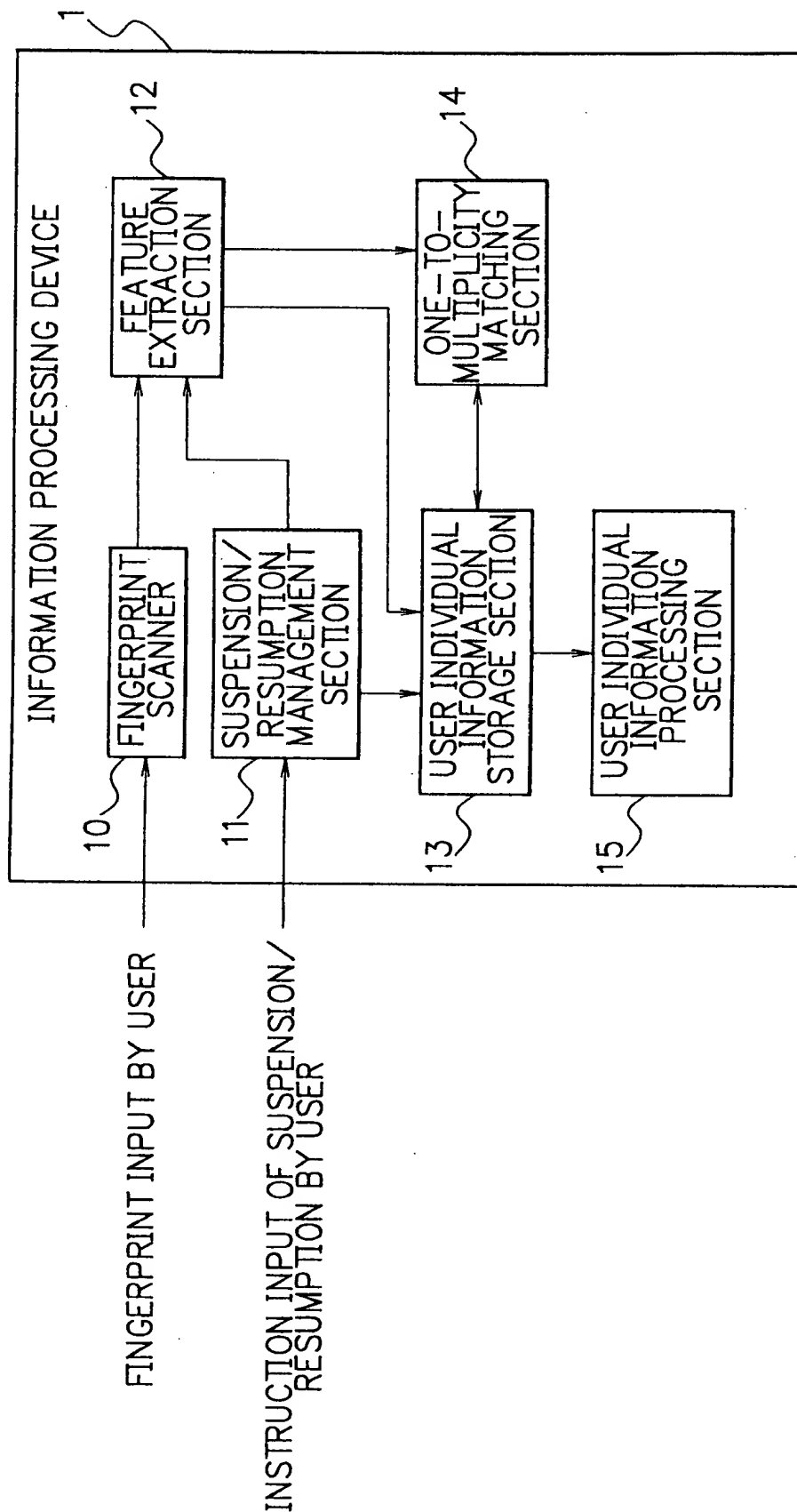


FIG. 2

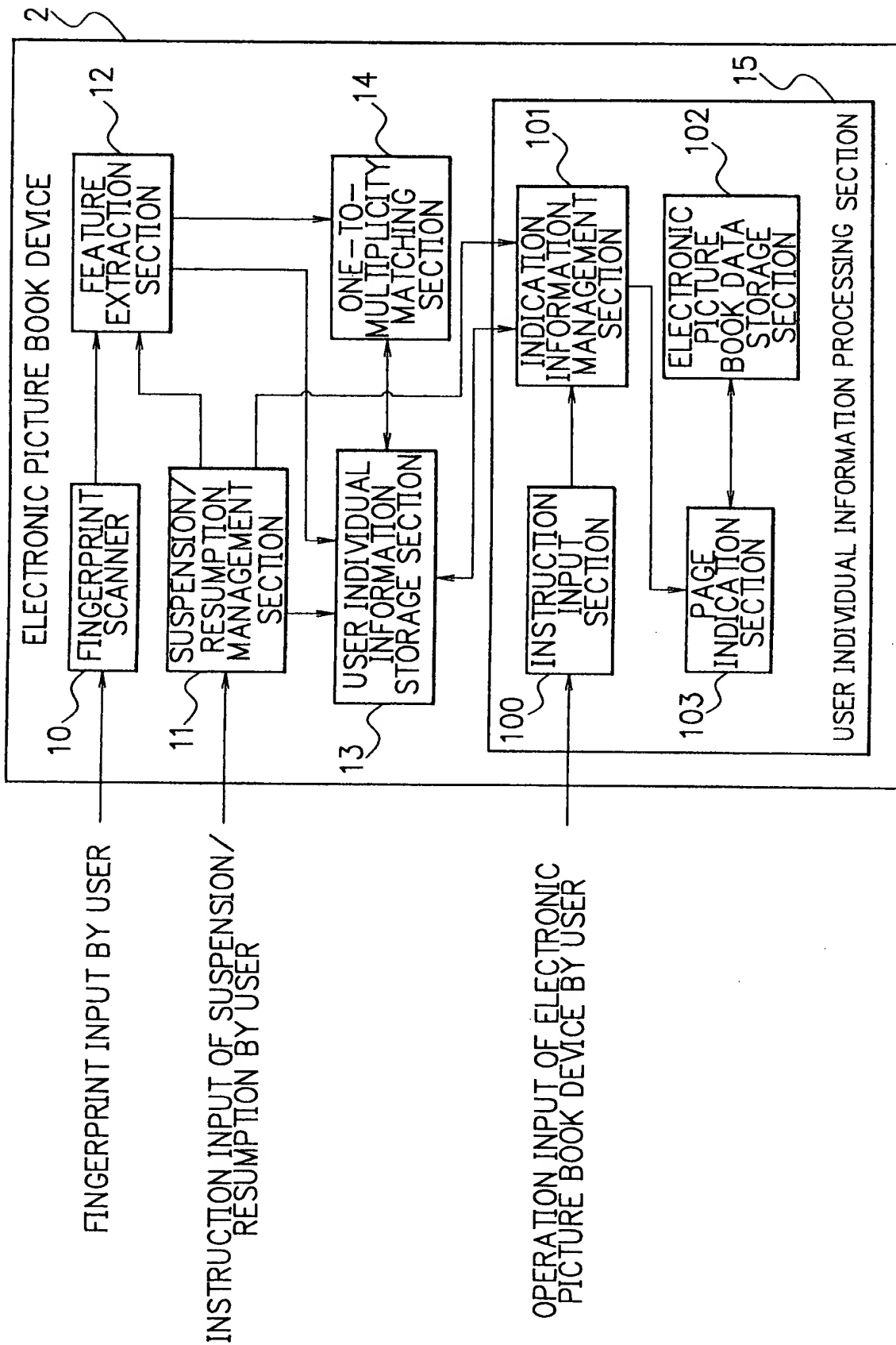


FIG. 3

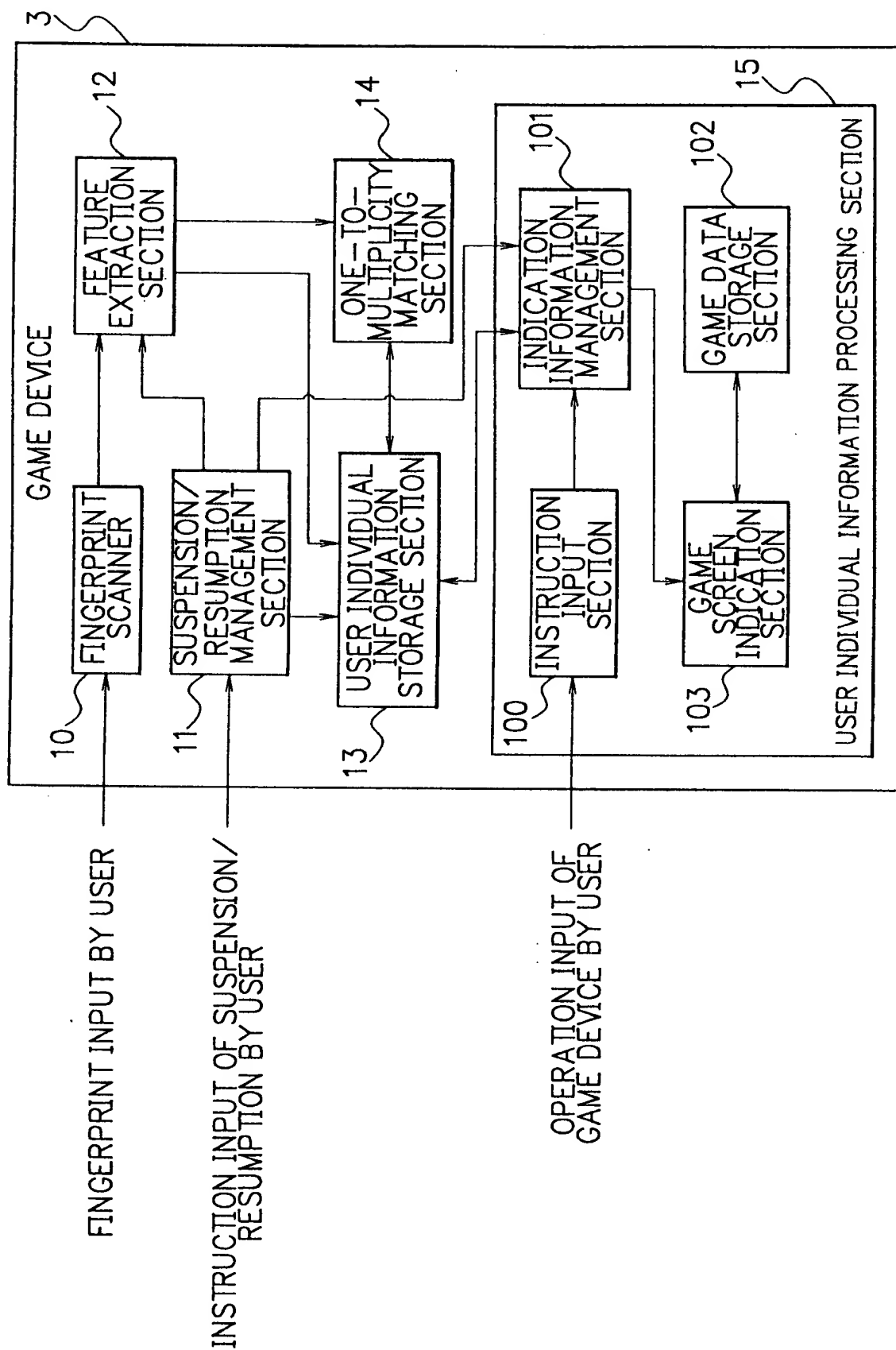


FIG. 4

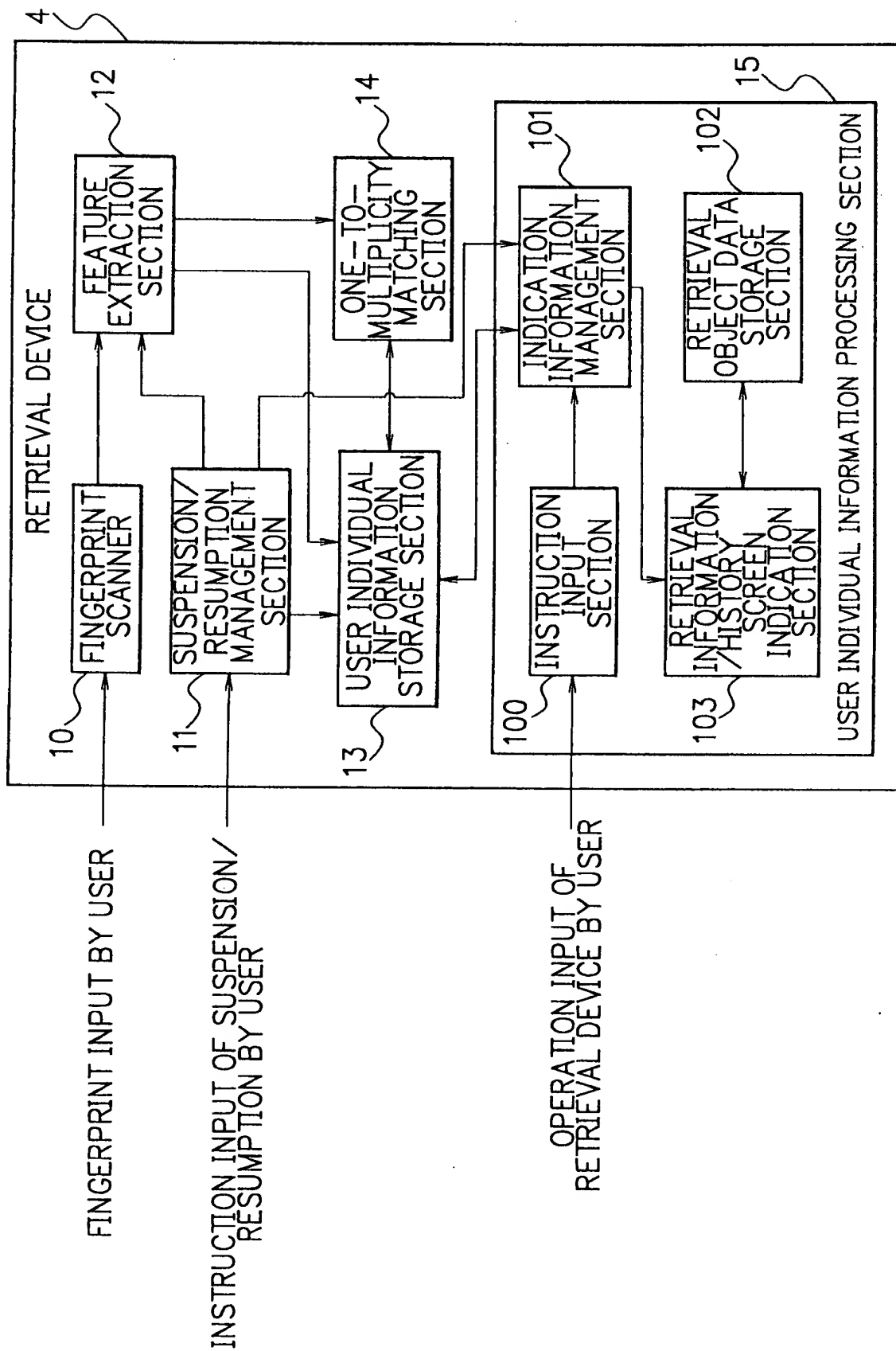


FIG. 5

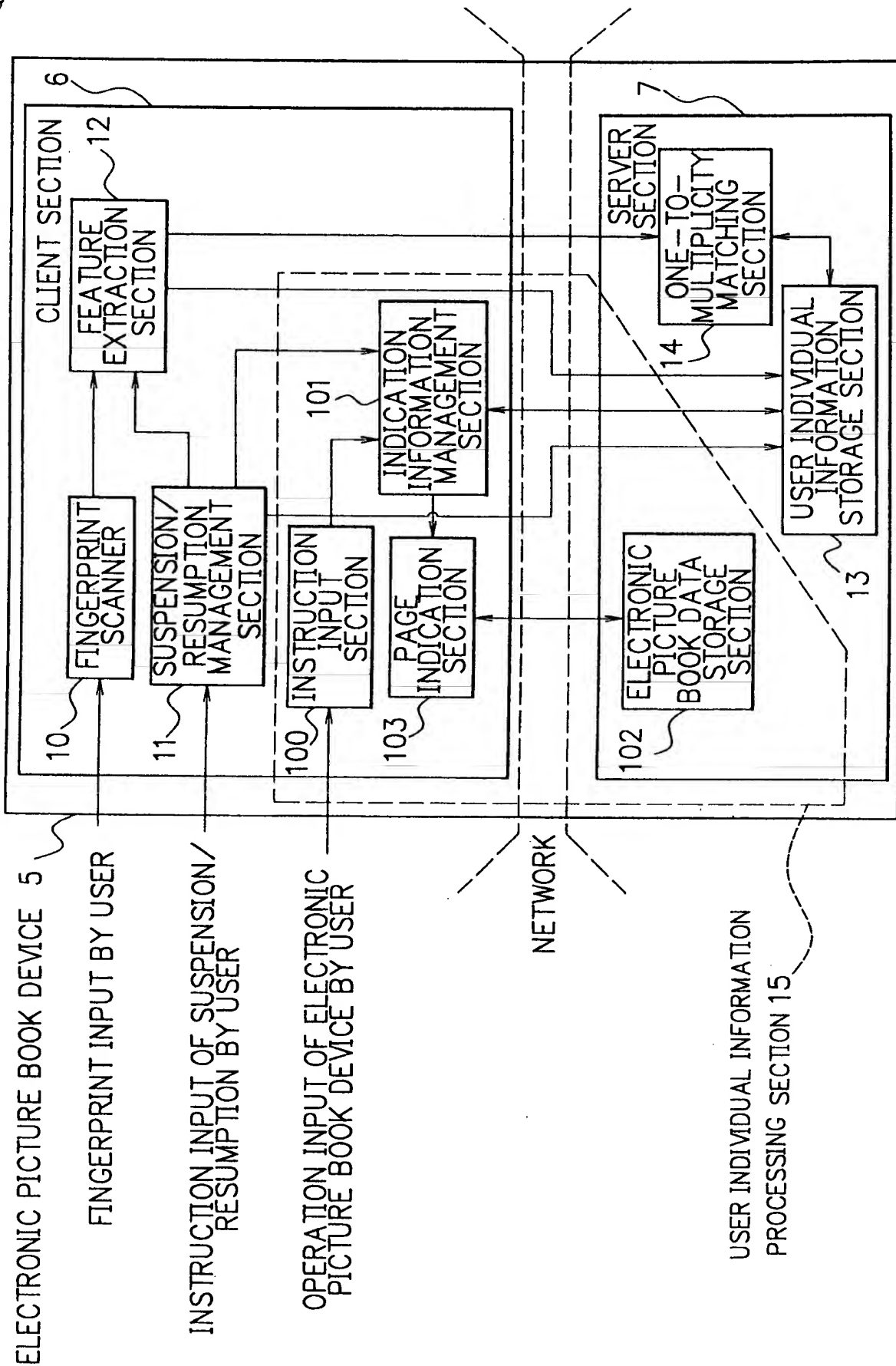




FIG. 6

